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DEVOTED TO PHOTOGRAPHY
IN ITS WIDEST SENSE

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CONTENTS

FRONTISPIECE
PORTRAITURE WITHOUT STUDIO FACILITIES—Illustrated . William T. Ives 209
ILLUSTRATION—Gold of Ophir Rose Bush . . . . . Wm. H. Hill 220
ARCHITECTURAL PHOTOGRAPHY—Illustrated . . . . Henry W. Bennett 221
A GELITINO CITRATE OF SILVER EMULSION FOR PHOTOGRAPHIC PAPER 232
PUTTING CLOUDS IN LANTERN SLIDES . . . . . Albert J. Hahn 234
THE FILM OF THE FUTURE 235
PERSPECTIVE AND THE MOUNT 238
USE OF MIRRORS IN PHOTOGRAPHY 239
CAMERA AND BRUSH . . . . . T. Lloyd White 241
SCIENTIFIC NOTES 243
LITERARY NOTES 248
BUSINESS NOTES 254
RECENT PATENTS RELATING TO PHOTOGRAPHY 258

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VOL. XX MAY, 1900 No. 233

PORTRAITURE WITHOUT STUDIO FACILITIES

WILLIAM T. INNES.

FROM time immemorial the study of human character has been, and I dare say will continue to be, one of the most fascinating of subjects for thought. Since the days of crudest art we have sought to captivate in permanent form the elusive expression personality gives to face and figure. Thus in glancing down along the line of representative artists we observe that the majority of notable work has been dedicated to the human figure.

We find the same feeling to-day; most beginners with the camera start out by "snapping" their friends and relatives.

In passing let us for a moment consider the boon of an easily attained art technique which the photographic process offers those who wish to make pictures of any kind, but have not the time nor opportunity to undergo the necessary drud-

gery for the attainment of even a fair degree of proficiency in expression. A result that took long years of study with the brush or pencil can now frequently be excelled in photography with a few months careful attention. It is with difficulty that we appreciate this easy access—this short cut—to artistic expression.

In carrying a little further the parallel between art proper and photography we find that while portraiture is undoubtedly one of the most enticing branches, it is also one of the most difficult. With this thought in mind I wish to set forth, especially for those with limited facilities, some points I have found useful.

After having a camera and accompanying paraphernalia the thing of next importance is a background screen. These are now made at quite a low cost, but should you prefer to make your own you will find a good way is to construct a frame from clothes props, about five feet by eight. Nail a strip across each end at the base. By fastening these up to the sides by diagonal pieces you will have a very fair stand for the screen. Cover one side of this with a cheap, rough, black or very dark cloth. The other side may be of nearly white goods. Clear manilla paper will do. Have also a strip of yellow burlap, which may be purchased in the upholstery sections of most department stores at a nominal sum. This latter I have been unable to find more than thirty-six inches wide. In using the burlap pin or hang on front of screen. When out of use lay away carefully, so that it does not become creased, which it will do very readily. This material I find the most useful background. It gives a dark color, but is still light enough to make a slight contrast against black hair or any deep shadow. The effect may be noted on any of the dark background illustrations of my own in this number. Personally I think clouded backgrounds look cheap, but that is a matter of taste. If you care to use one you will find a good way is to dust the dark side of your screen with flour; then brush off in places to produce any desired clouding. Now we are moderately well equipped for all styles of subjects. A more elaborate, but very useful screen can be constructed of three frames, as before mentioned, hinged together, of course leaving one open end. The two side divisions need not be over three or

Reverie WILLIAM T. INNES

Taken with a single lens. Exposure about four seconds, at 4 o'clock on a bright July afternoon. The sitter nearly faced a window which was quite close. To the left, and at right angles, was a secondary source of light, partly shaded, which gave the soft lighting on the side of the face. Yellow burlap background.

"Tiny" WILLIAM T. INNES

An out-door picture taken in August, at 5 o'clock. Time, ½ second with a double lens at widest aperture.

four feet wide. For those having only a single side light this contrivance can be utilized to great advantage, as by placing sitter within the screen and using light sides as reflectors a variety of lights may be obtained by working the hinges at various angles and covering portions of reflecting sides with dark cloth. A clothes-horse hung with any suitable material will do as a temporary background.

For outdoor work it is difficult to make many definite suggestions. The light in the yards of most city houses can be utilized to good advantage at certain hours, the best time being when the sun is not particularly bright. In June, say from eight to nine o'clock and again from four to six. This depends largely upon location. Never pose a sitter in a very bright light; it changes the expression of the eyes, besides having a tendency to produce a harsh, flat effect, with little shading. For both indoor and outdoor work a rather dull, gray day is much sought after by the expert.

Experiment freely before making your exposure. Try the light at all angles. Patience and deliberation as against hit-or-miss methods, here as elsewhere, produce just the difference between success and failure. The main point to be observed in lighting is to see that the shadows fall gracefully about the features. This gives reality and roundness to the picture—"modelling" is the art term.

Beginners are often disappointed because the result appears so different from the expression of the sitter at the time of exposure. There are three main reasons for this. FIRST, the observation has not been made from the same point as the location of the lens. While it is scarcely possible to observe from exactly the same point, yet one should think imaginarily from the eye of the camera and be as near it as possible. SECOND, the beginner does not understand the relative photographic values of lights and shades. The negative gives more contrast than the eye observes. Thus a person with some wrinkles and slightly sunken cheeks may look fairly bright and well and yet give a haggard, careworn appearance in the print. This is because the photographic process has a tendency to accentuate shadows. Therefore try to avoid very strong contrasts unless you deliberately wish to use them to a certain artistic purpose. THIRD, errors of development are responsible

for many poor results, the general fault being in developing too far. Portrait negatives should be rather thin. A good general rule is to develop only until the highest lights appear fairly dense when held before the ruby lamp. Much density gives harshness, destroying the finer shadows and consequently much of the expression. For over-development reduce cautiously with ammonium persulphate.

Almost any of the standard developers will do, the least desirable being iron oxalate or plain hydroquinon. The writer favors pyro. For under-exposures develop a long time with diluted developer.

In regard to groups it will generally be found that outdoor work is the most satisfactory unless indoor facilities are exceptional. This is because the light is stronger and more even, which allows a shorter exposure and requires less attention to the lighting of an individual subject. There may be lots of fun in flashlight work, but its merits for portraiture are very meagre indeed.

For inside work it is desirable to have lights at right angles, but very creditable results may be obtained from single lighting, especially where the folding screen is used. In either instance you will naturally place the subject near a window. Lace curtains drawn across will help diffuse and soften the light. Here again patient experimenting will be found profitable. Napoleon said there are three things essential to a successful campaign. The first is money, the second is more money and the third is more money. Substituting the word patience for money we might apply the same statement to photographic portraiture.

In double or right-angle lighting I have found it a good general rule to point the camera in a direction across the window, the subject's body turned half way between window and camera and the head turned yet slightly more toward the camera. The eyes should be turned rather toward than away from you. To vary the light on either side of the face move the subject back or forth between the two windows supplying the light. The same result can also be obtained by raising or lowering shades at windows. Sometimes you may wish to bring out the profile in bold lines, such as in portrait of T. C. C. This is accomplished by what is technically known as

Portrait of T. C. C. WILLIAM T. INNES

Picture taken "against the light," as described on page 214.

Portrait of Philip Dalmas WILLIAM T. INNES

Photographed in an ordinary room. Window to subject's right, a reflecting screen to the left. Single lens.

photographing toward the light. The sitter is placed with side to the window. The camera is then stood approximately in the same line, *i. e.* toward the dark side of face. Some manœuvering will be found necessary in order to correctly place the background (which should be a dark one) and still not cut off the light materially. Take your stand a little towards the front of subject and place the screen a little to the back. Very effective pictures of persons with interesting profiles can thus be produced. Develop for good contrast and make your print dark. For a profile picture in regular Rembrandt style with light directly in the face almost any single or double light will serve, but you will find few faces suitable for this. A hollow or angular face will never do. For these pictures the clothing should be dark.

While it is easy and pleasant to make suggestions where double lighting is to be had, the fact remains that most amateurs have only a single flat light at command. In this situation I repeat that the folding screen is most efficient. By its use a considerable variety of lighting can be had by varying the angles of hinges, relative position to source of light and by changing the reflecting surfaces on the sides. Without this arrangement a fairly good effect can be produced by using a light sheet to reflect on the dark side of face. This will require an assistant, unless you can utilize something like a cloth-horse. Hold the sheet as close as possible, but be careful that it does not get in the picture.

In using a rectilinear or any double lens see that it is not in sharp focus when making portraits. What we are after is the impression of a personality, not a microscopic record of facial blemishes. When throwing out of focus push the lens forward if you wish the background completely out of focus, which is generally desirable. Use the largest stop. Most of my own best work has been done with a cheap single achromatic lens. It gives softness and "atmosphere" while in focus, at the same time producing sufficient detail for fine effect.

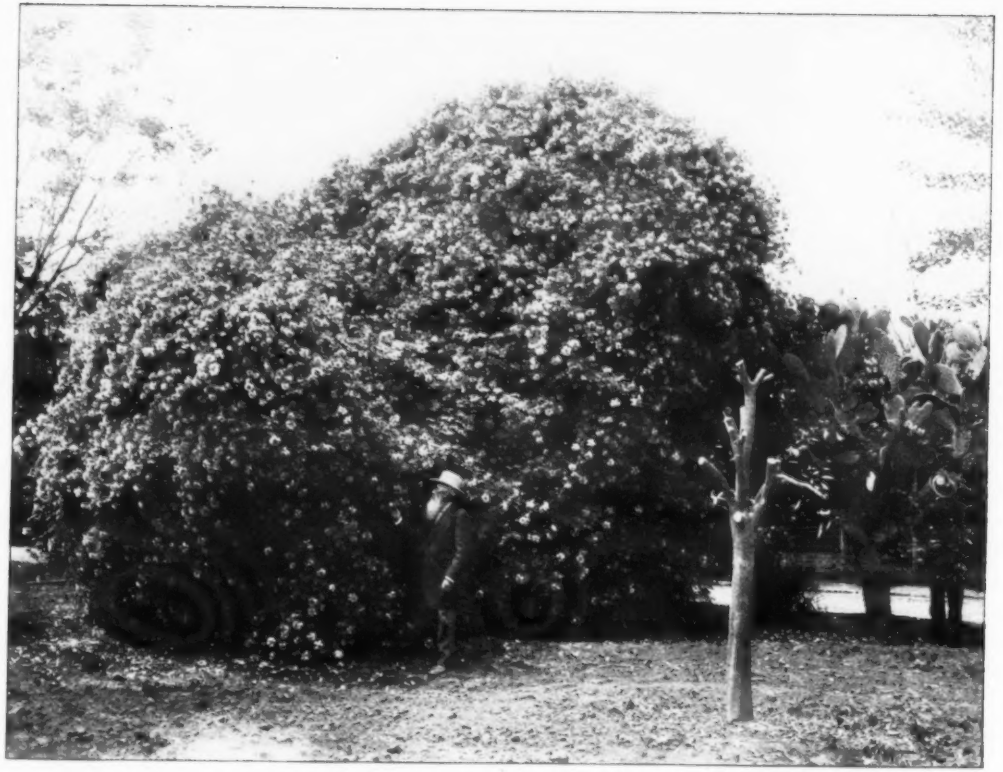
One of the chief resources, and one of the most valuable, is the art of retouching. Much of the difficulty in this branch of work is imaginary, and many refrain from undertaking it merely because of a preconceived notion that years of training

are necessary. It is true that the finest accomplishments of the retoucher are only obtained after long and patient practice, but for practical purposes a very useful technique may be developed after a few trials. The first step is to procure a small quantity of retouching varnish from your photographic dealer. The directions given may be to apply with soft rag or cotton. A far superior method is to touch the portion of negative you exexpect to work on with a drop or two of varnish direct from the cork. Spread rapidly with the finger at once with circular motion as far as it will go. This will give a very thin coating, which will dry in fifteen minutes and which will contain no fuzz from rags or cotton. The retouching is done with a lead pencil and is chiefly to build up lights and smooth over defects, the method being to *dot* the pencil on, rarely attempting to draw a solid line. In this way any shadow may be softened down. A pit or scar on the cheek, for instance, makes a clear spot on plate. Dot this in lightly until it is the same color as surrounding film. In this way defects are obliterated. A pleasing feature about the work is that if your efforts are not satisfactory the whole of the retouching can if necessary be washed off with alcohol. Allow the plate to dry and you are ready to re-varnish. The best method of dealing with parts of the plate that are too thick is to print on platinum paper and darken with black crayon, applying the color with a blender. This paper will be found best in many ways for portrait work, giving a more artistic effect than glossy paper and allowing much more latitude in spotting the print. India ink applied by a fine brush is very useful in spotting small places.

An easy, unruffled manner in the operator counts for much in the expression of the sitter. The bugbear of portraiture is self-consciousness. Try at once to find a topic for conversation that will really interest the subject. Use your resources to destroy the unnatural effect so readily noticed in those made nervous by thinking of themselves. Often a strained, tense appearance can be dispelled by having the subject leave the chair for a few moments. Perhaps you will be clever enough to find some pretext to accomplish this. If possible avoid letting the sitter know just when the exposure is to be made. The most hardy will frequently flinch and undergo a marked change of expression unless they are taken somewhat unawares.

After the varied photographic processes are performed it should be remembered that the picture may yet be made or unmade in the mounting or framing. A passing view of any exhibition will demonstrate this. Harmony is the effect to be sought after throughout—in posing, in printing, in mounting and in framing.

Baby's First Picture WILLIAM T. INNES.



Gold of Ophir Rose Bush

WILLIAM M. HILL

ARCHITECTURAL PHOTOGRAPHY

HENRY W. BENNETT.

Read before the Royal Photographic Society, London.

ARCHITECTURAL photographs may be broadly divided into two classes, those that aim at giving a pictorial representation of some fine or characteristic piece of architectural work and those that are simply accurate and faithful reproductions, fulfilling the functions of working or detail drawings, where no attention is given to pictorial effect so long as accuracy and clearness are secured. This paper is intended to refer to the former class only.

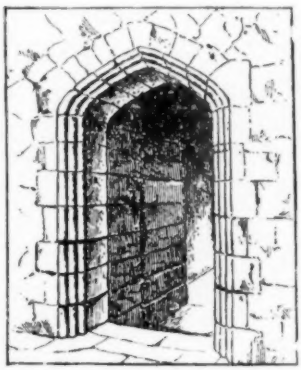


FIG. I.

Interior work has been considered more than exterior, partly because the interiors of most buildings that the architectural worker probably would select offer the greater opportunities for suitable subjects, and also on account of the greater difficulties and special character of the work. Though suggestions may be given, the actual subject must be entirely a matter of personal feeling. All that makes a picture successful is implied in selection and treatment, and the individuality of the worker has so much influence at this stage, his capability so severely tested, that no effort should be spared and no expenditure of time considered too great for selecting a subject and studying the conditions for expressing it in the most characteristic manner.

Whatever the subject, it should possess some characteristic architectural feature. There should be a due proportion of foreground and extreme distance; there should be an entire absence of any suggestion that the subject is incomplete or

imperfect; the perspectives should not appear strained or unnatural; the composition, in the ordinary sense of the term, should be good, and the disposition of light and shade should be harmonious and satisfactory.

It is not easy to fulfil all these conditions. Frequently the space for working is very limited and the available positions very few; and, again, windows are very troublesome and difficult to avoid.

The importance of the lighting in regard to the effectiveness of the picture is appreciated by most workers, but there is another aspect which does not appear to be so recognized, and that is its effect on the character of the architecture. Frequently a difference in the time of day will materially affect the nature of the lighting in this respect. The direction in which the strongest light enters windows may entirely change the character of the work. Certain portions may be emphasized or brought into relief, while others of less importance may be relatively subdued, and it will repay any worker to study his subject under varying aspects due to this cause before deciding to expose his plate.

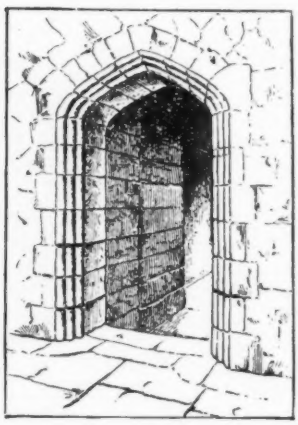


FIG. 2

Insufficient fore-ground is a weak point in many architectural photographs. In the desire to show more roof and cut off some of the large expanse of floor that is almost always seen on the focusing screen before the rising front is called in requisition, there is frequently a danger of cutting off far too much and considerably detracting from the value of the principal points of the picture. There should in most cases be sufficient floor in front of the nearest vertical object to suggest the space that really exists between it and the observer. This sense of space is never conveyed if the floor is cut off immediately in front of any important object.

No. 103 in the Society's recent exhibition, Doorway to Crypt, Durham Cathedral, may be quoted as an example of an otherwise admirable photograph ruined by this defect. The subjoined sketch, Fig. 1, shows how the foreground is cut off so close to the door that even the line where the wall and floor meet is not completed. Fig 2 illustrates the improvement resulting from the addition of a due proportion of foreground or floor and how it aids the perspective of the picture.

Distance is a factor that is sometimes overlooked, but it is quite as important as in landscape work. Nothing is worse than to see the whole of a subject on one plane as is frequently the case when a doorway or similar subject is photographed. There should always be some work, or at least the suggestion of work beyond the principal point of interest. An open door, suggesting something more distant, will frequently be sufficient when nothing else is available.

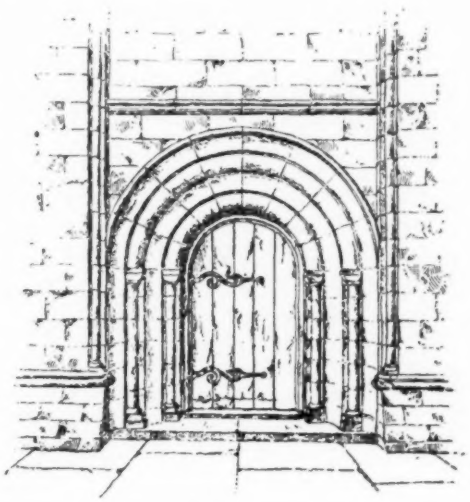


FIG. 3.

It is desirable, when photographing doorways, that an angular rather than a perfectly square view should be taken. When the camera is set exactly in front the result is far too geometrical to be pleasing and the sense of relief is largely lost, while with a more angular view the effectiveness of the picture is not only greater, but the projection or relief of the various parts is better represented and the character of the whole work more satisfactorily conveyed.

In connection with the consideration of perspective, fore-

ground and distance, the value of lines running into the picture is very great. One or two only will frequently convert a flat meaningless mass into a receding plane.

These remarks have been suggested by a consideration of some of this year's exhibits, and sketch No. 3 is intended to illustrate the manner of photographing a doorway adopted in No. 336, Doorway, Barfreston Church, and No. 358, West Door, Lichfield Cathedral. In each case the camera has been set up fairly in front of the door, which is closed, so that there is little or no suggestion of perspective, no distance and a weak foreground. A comparison should be made between this and Fig. 2 and the following two views of the same doorway taken at an angle and with the door open to suggest distance.

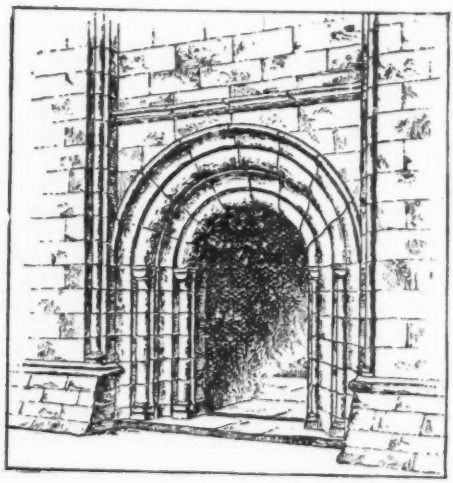


FIG. 4.

Fig. 5 illustrates the value of receding lines in assisting the perspective of the foreground, as mentioned in the preceding paragraph.

This same principle should apply in all subjects; any approach to a symmetrical view should be always avoided. In the choir or aisle of a cathedral, for example, the camera should be placed out of the centre, so as to show more of one side than of the other, the perspective lines converging to a point away from the centre, and the side more fully shown should contain the chief point of interest.

Naturally, in photographing small details, these items, foreground and distance, cannot enter, but these are generally

taken for their own value rather than for pictorial results. Still, whatever is photographed, it is best to secure all possible pictorial qualities. The picture will always gain an additional interest.

There is another quality that does not always receive the attention that it deserves, that of *completeness*. No architectural photograph can be considered satisfactory if it conveys the impression of something lacking to complete the subject, as an arch or a column almost perfect, but broken off just incomplete.

FIG. 5.

This is a defect that so frequently occurs in the productions of those that can fairly be called leading workers that it is necessary to emphacise it very strongly as a fault. It is surprising how many examples of this defect there are in this year's exhibition. The Tomb of Margaret of Austria (109), Bron Church, shows a fine tomb cut off by the frame at the bottom, losing not only the foreground but even the line where the floor and tomb should meet. Fig. 1 illustrates the same fault and Fig. 6 (Across the Choir, Gloucester), the doorway is cut off at top and bottom. Fig. 7 shows top and side cut off.

The type of camera which will be found most convenient is that focussing from the front, the back being fixed. The extension should be considerable and there should be a good range of rising front.

The possible rise should be one-third the length of the plate,

or even a little more, 4 or 4½ inches in a 10x12. To allow the lens to be raised to this extent without the bellows cutting off any portion of the picture, they should be attached to the rising portion of the camera front and should be slightly tapering only. The tripod should be adjustable for height, to facilitate working in awkward situations and to insure greater rigidity and also to prevent any risk of slipping, a tripod-stay, consisting of three slatted bars connected by a screw and firmly attached to the legs of the tripod, will be found to give great security in working on smooth floors. No architectural worker should ever be without the valuable addition of this outfit.

The points of the tripod legs may be inserted in corks or short pieces of india-rubber tubing, or the whole may be stood on a rug in addition to using the stay. Every precaution should be taken to insure stillness throughout the exposure.

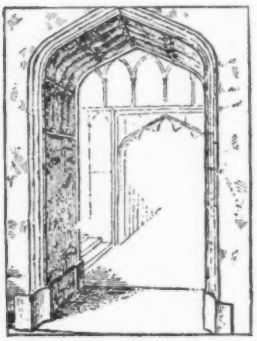


FIG. 6.

The most suitable weather for interiors is when there are plenty of light clouds, especially when they are low down. The light is so diffused that dark corners are better illuminated and the lighting of the whole building is softer and more harmonious.

One of the great difficulties is the contention against harshness and hard contrasts in illumination.

The time of day exercises considerable effect in lighting any particular portion much more than is generally imagined.

The lens is the most important tool and should be selected with care and thought. It should, if possible, cover an angle of 100 degrees; that is illuminate a circle whose diamater is about 2¼ times the length of focus. It should be rectilinear, have perfectly flat field, be free from astigmatism and give good definition a margin with large aperature. These conditions are fulfilled by the modern anastigmatic lenses. Their value to the architectural worker can scarcely be over-estimated. The difference in focus for near and distant objects requires comparatively little stopping down, but with most of the ordinary wide-angle rectilinears the field is so round that a very small

diaphragm is necessary to secure good definition over the whole of the plate when the lens is raised much above the centre. The necessity for the power of covering so wide an angle arises from the fact that the lens has frequently to be raised so far above the centre that, although only a moderate angle is included on the plate, yet the extreme margins of the field of view are utilised. If the lens covers 95 to 100 degrees it allows the rising front to be freely used without any risk of the corners of the picture being cut off.

The principle of perspective representation is simplicity itself, but the actual practice is, in drawing especially, very difficult. The photographer has in this respect an immense advantage over the draughtsman, for the lens will render perspective perfectly; but in order that the perspective may be pleasing or satisfactory the lens requires using with considerable discretion, and it is to be feared that the wonderful facility for correct representation that the lens places in their hands prevents the majority of photographers from giving this subject of perspective the attention it demands. In no photographic work does this necessity for good perspective rendering apply with greater force than in architecture, where the subjects being almost entirely composed of geometrical curves and straight lines, show defects in perspective that would never be apparent if the subject consisted of trees or winding streams.

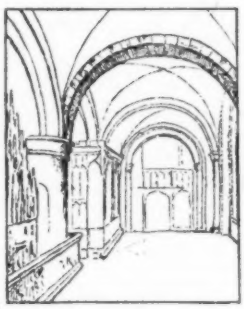


FIG. 7.

In the perspective of a photograph so much depends on the relation between the focus of the lens and the size of the plate that it should receive, from the architectural worker especially, very serious consideration. At the same time, it should be recognized that the relative size of objects at different distances is independent of the focus of the lens, and depends entirely on their relative distances from the camera. The use of a very short focus lens, however, requires the camera to be placed very near the principal part of the subject to obtain a sufficiently large image, and this causes near and distant por-

tions to appear very disproportionate. If, for example, you have a series of columns or arches, and in using a very short focus lens, the nearest is 10 feet from the camera and the farthest 90 feet, the latter will appear one-ninth of the size of the former in your negative, but if you substitute a lens of double the focus and retire to a distance of 20 feet from the nearest, the farthest will now be 100 feet and appear one-fifth the size of the nearest, which would be the same size in each negative. This exaggeration of distance carries with it another defect; all lines that are horizontal in the subject are represented converging to a painful extent in the picture, and the effect of the whole is strained and very far from pleasing. On the other hand, the use of a lens whose focus is too long is equally unsatisfactory and displeasing. The distance is not represented in proper proportion, and perspective lines converge so slightly that they do not suggest receding or approaching surfaces.

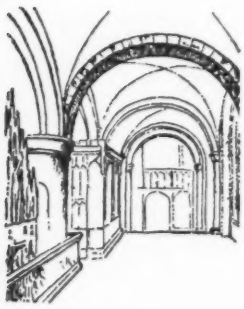


FIG. 8.

There is another point in connection with long and short focus lenses that should not be overlooked, and that is aerial perspective or atmosphere. Since, with a given exposure, objects nearer the camera will appear with greater contrast than those farther away, it follows that the different planes of the picture will be better rendered with a short focus lens than with a longer. When a tele-photo lens is used for buildings the different portions of the subject frequently appear almost in one plane, and the absence in perspective effect in the lines increases this effect.

The most satisfactory medium between the two extremes appears to range from a length of focus rather less than the length of the plate, to about 1⅓ times, for a 12 by 10 plate from about 10 or 11 inches to 16 or perhaps 18. For interiors it is not practicable to do much work with the longer focus lens, excepting perhaps doorways and small portions, the space available for working is, as a rule, so very limited. An 11-inch lens on a 10x12 plate, if judiciously used, will not pro-

duce the exaggerated perspective effect that disfigures the photographs taken by those that include a very wide angle, and it will embrace sufficient subject to produce a satisfactory composition under all ordinary circumstances. It is very undesirable to use a lens much shorter in focus than this relative to the plate it covers.

For exteriors it will more frequently be possible to work with the larger size mentioned, 16 or 18 inches, but for the reasons given longer focus lenses than this will rarely be satisfactory.

The most natural and pleasing effect is obtained if the camera is placed as near as possible to the normal height of vision, that is, 5 to 6 feet from the ground. Working from a height as occasionally advocated has nothing to recommend it excepting saving of trouble; the results obtained are a sufficient condemnation. Buildings are designed to be seen from the ground, and the character of the work at different elevations is largely due to this fact. It is only necessary to ask you to compare the effect of photographing the exterior of a building having a large projecting cornice 15 or 20 feet above the ground, first from the ground and afterwards from a height of say 30 feet, to emphasise this point. In the first case all the work of the cornice is represented as it appears to the observer; in the second this cornice is shown as a plain flat surface, with perhaps a few gutters for the rain to run off. This is an extreme case, but others are almost as striking, and what is quite as important, in a photograph taken from a height all sense of proportion is lost.

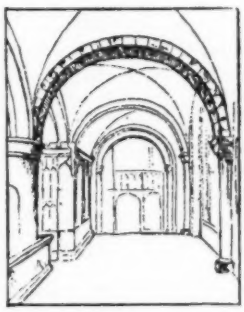


FIG. 9.

For plates I prefer those of moderate speed rather than the very rapid. Prolonged development is frequently necessary, and very rapid plates rarely survive this ordeal satisfactorily. This, however, is largely a matter of personal preference. They should never be used unbacked.

Exposure is a difficult problem in interior work, so many

factors have to be taken into consideration. Over-exposure is quite as unsatisfactory and as difficult to deal with as in landscape work, while it may safely be said that an under-exposed interior is absolutely worthless. I do not think that an actinometer is of any practical value. When it is said that the depth of the deepest shadow determines the length of the exposure, only half the fact is stated; it is not only its intensity, but in addition its distance from the camera, that determines its effect on the photographic plate, and this effect, the result of intensity and distance, no actinometer can measure.

Estimating the exposure from the appearance on the ground glass appears to be very unreliable. If an exposure were estimated by this method immediately on entering a dark building, it is surprising how different the estimate would be compared with that judged sufficient after remaining in the building for two or three hours. And in dull weather the eye becomes so accustomed to the weak illumination indoors that it is a most unreliable guide.

It is impossible to formulate rules. The number, size and position of windows, the kind of glass used in their construction, and the surrounding buildings or trees that may obstruct the light, are the main factors that determine the length of exposure necessary. The color of the walls and their effect in reflecting light into dark corners and the manner in which windows light the lighter colored work better than the darker, or *vice versa*, must also be taken into consideration. A well-lighted cathedral nave will be fully exposed in eight or ten minutes using *f*/32 and a plate of the speed of Ilford ordinary in the best spring or early summer light, while for the choirs of most cathedrals, which are generally very dimly lighted, and the light strongest on the upper light stonework rather than on the dark oak stalls where the photographer wants it, an hour and a half to two hours would be necessary under the same conditions.

Development in interior work is not by any means the mechanical operation that some photographic writers have maintained, and success cannot possibly be assured without giving the most careful and thoughtful consideration to the plate when in the developing dish. The method of working that I have found most successful differs from that frequently adopted

of first producing a feeble image full of detail by means of a weak developer and afterwards bringing it to printing density by means of stronger solutions. The objection to this method of working in my hands has been its uncertainty. A plate may be over-exposed, and then the image given by a weak developer practically defies the power of a stronger solution to produce a vigorous negative. Rather than produce detail first and density afterwards, it appears to me to be preferable to produce density first and detail after. It is my usual practice to commence the development of all negatives, whatever their subject, with a standard developer containing in each ounce, pyro 1½ gr., ammonia 1½ min. and ammonium bromide ¾ gr., and as development proceeds modify as the appearance of the plate suggests, the most frequent modification being the liberal addition of water, by means of which softness of gradation is secured.

With the most careful work errors in exposure will occur, and even assuming the exposure to be correct, it is not always easy to judge the constitution of the developer that would be the most suitable. The advantage that results from the plan advocated is that the appearance of the partially developed images under absolutely uniform conditions forms a very reliable guide to the variations necessary to suit the subject or secure the desired effect, and this developer is sufficiently slow in its action to allow ample time to vary its constitution as the appearance of the image may suggest.

I generally endeavor to obtain a negative possessing a rather longer range of gradation than the printing process will satisfactorily render, and then by covering the glass side with thin tracing paper and cutting it away at those portions that print too light and adding a second thickness at those parts that appear too dark, a more harmonious and satisfactory rendering is obtained than would be possible by developing a thinner type of negative. Both shadows and lights have more strongly marked gradations, and the rendering more nearly approaches the effect seen by the eye.

The pictorial possibilities of architectural photography is so debateable a question that it does not appear desirable in a practical paper to introduce controversial matter, though it may be permissable to express the opinion that there is oppor-

tunity for work of distinctly pictorial character in architectural photography. There is certainly a tendency at the present time to consider pictorial quality far more than formerly, and there are indications in some workers' productions that there exists a danger of the pictorial idea running wild, and good qualities that should distinguish architectural photographs being entirely lost.

A subject should be rendered as it appears. A very dark crypt, for example, if one remains in it a long time, has its details plainly visible, but it is still dark and should appear so in any representation that claims to be good, and a light interior should be light. Any other rendering is false and incorrect. Light buildings are frequently shown dull and gloomy, because such an effect is considered by many to be more impressive and pictorial. It appears, however, to be due to a thoroughly false conception of what constitutes "quality" in a picture.

In a pictorial photograph of architecture detail and sharp definition are as essential as in any architectural photograph. There is so much character in the architecture itself that the photograph fails completely if it does not reproduce it. If detail and definition are lost the character is lost also, and I do not think that retaining either is inconsistent with true pictorial quality.—*The Photographic Journal.*

A GELATINO CITRATE OF SILVER EMULSION FOR PHOTOGRAPHIC PAPER

AT a recent session of the Union Nationale des Sociétés Photographiques de France, M. A. Blanc brings out the fact that the formulæ for preparing photographic papers of the citrate of silver type are little known, and he proposes to give a formula which he has found to be very good in practice, giving very clear whites with a great facility in toning. Before proceeding to prepare the emulsion

proper, a preservative emulsion is first prepared according to the formula:

Alcohol 90°.....15 c.c.
White shellac..... 5 grammes.

Dissolve hot and pour rapidly into 100 c.c. of boiling water; filter through absorbent cotton. The yellowish white emulsion thus formed will keep for a considerable time. To prepare the sensitive emulsion he proceeds as follows:

SOLUTION A.

Gelatine, best quality..... 9 grammes.
Chloride of cobalt, 5 per cent. solution 6 c.c.
Neutral tartrate of ammonia..... 2 grammes.
Citrate of ammonia..... ½ gramme.
Water.....70 c.c.

This is to be placed in a porcelain receptacle of about 150 c.c. capacity. In a smaller vessel is placed:

SOLUTION B.

Nitric acid..... 2.3 grammes.
Distilled water.....20 c.c.

After mixing add 2½ grammes crystallized nitrate of silver.

The vessels A and B are placed in a water-bath and the temperature kept between 70° and 80° C. Each solution having been well mixed, B is poured rapidly into A, and to the emulsion which forms is added:

Alcohol, 90°.....10 c.c.
Preservative emulsion ..... 5 c.c.

Mix and filter through absorbent cotton; the emulsion is then ready to be applied to the paper. It should be used as soon as possible after preparation, as it will not keep longer than a few days. The paper, of course, may be kept for a long time without deterioration.—*Optician and Photo-Trade Review.*

PUTTING CLOUDS IN LANTERN SLIDES

ALBERT J. HAHN.

NEXT to negative-making one of the most interesting branches of photography is slide-making. Many a pleasant hour can be passed in reproducing in slides your summer vacation, some pleasant trip or jaunt! I will not go into the details of slide-making, so much having already been published on that branch of the art. Sometime when looking for something new or you want a change work clouds in your views; if possible have as many cloud negatives as you can get, a dozen would not be too many, even if you must borrow from your photographic friends. If you are fortunate enough to have a rack to hold your negatives and a regular camera for slide-making your work will be comparatively easy, as in using the negative rack the size of negatives will not be a drawback. In making slides, after having first set negative of view up and reduced to size wanted (allowing space for clouds), mark off the sky line on the ground glass, using a lead pencil made for writing upon glass. Then make a rough sketch of mountains or trees or drawing a horizon line if it be waterscape; make your exposure for the foreground shading the sky of negative with the bag or a card blending down below the part where the clouds are to be placed. Take negative down, and having selected clouds suitable for the view set negative up so that it will come down below the rough sketch made on the ground about one-half inch to an inch. Make your exposure for the clouds shading from the bottom up, so as to blend in the clouds with the foreground. In shading would advise a long, steady sweep, so that the shading will not be noticeable, for when developing you are apt to find a nice large cloud resting inside of a house or amongst the trees, perhaps ruffling your temper, or as David Harum says, "making you hate yourself," leaving nothing else to do but try again.

Great care should be in the blending, as that is the only difficulty to be overcome. Don't become discouraged by failures, but keep at it until your efforts are successful, and then you you will feel amply repaid for your trouble from the pleasure which you will derive from a perfect slide.

THE FILM OF THE FUTURE

A GREAT amount of time and of inventive skill has during the last few years been devoted to the discovery of some artificial product which shall be hard, structureless, easily worked, waterproof, not very inflammable and cheap. Something, in fact, which will take the place of ivory—something which shall have the good qualities of celluloid without its drawbacks. If it can be moulded or worked while in a plastic condition so much the better.

Such a material, were it to be transparent, would be of immense service to photographers. The best substitute for glass that we have at present is celluloid. Celluloid, unfortunately, leaves much to be desired. For one thing, it is very inflammable, although not so inflammable as its reputation would suggest. For another, it is a mechanical mixture of substances, one at least of which is volatile, and it is certainly not inert as regards a sensitive film coated on it. Besides, the basis of celluloid is pyroxyline—a nitro-cellulose, and the substance which is wanted should be a cellulose, pure and simple. The difference is one which all photographers well understand. Celluloid has a form of gun cotton as its basis. The product we want must have plain cotton or its equivalent.

In this connection a paper read before the Society of Arts a short time since, and published in its journal (*Artificial Silk*, by Joseph Cash), has an interest for photographers which might not at first sight be expected. Artificial silk is prepared by making a form of collodion, which is a solution of nitro-cellulose in alcohol and ether, squirting or drawing this out into fine threads, and then, after these threads have been twisted and skeined, the nitro-cellulose of which they are composed is *de-nitrated*. In this process it is treated with some substance—such as calcium sulphydrate—which converts the inflammable and otherwise unsuitable nitro-cellulose into cellulose, or something of practically the same composition. This process is being worked at Besançon in France, at Sprietenbach in Germany and at Wolston, near Coventry, in this country.

It will be seen that the process of making a cellulose thread from plain cotton, or some other fibre which is practically cellulose, is a roundabout one. First, the cotton is nitrated, or turned into gun cotton (not the explosive variety, but a highly inflammable one), by the action of sulphuric and nitric acids. Then the gun cotton or nitro-cellulose is dissolved in ether and alcohol and the liquid squirted to form the threads, the alcohol and ether evaporating. Then the nitro-cellulose thread has to be de-nitrated or brought back to the cellulose condition again. As Mr. C. F. Cross pointed out at the meeting, a cellulose material made from cellulose *via collodion* seems to be obtained by a very circuitous route.

There is another way of getting a result of a somewhat similar kind, and that by a much more direct way. We do not wish it to be inferred that it is necessarily better; it doubtless has its drawbacks, but on paper at any rate the method seems a simpler one. It is by dissolving the cellulose directly and then precipitating it again. It may be news to some of our readers that such a substance as paper can be dissolved and precipitated again, virtually with the same composition but without the fibrous structure; but, as a matter of fact, there are several ways of doing so.

Cellulose, such as cotton, paper, wood fibre, etc., can be dissolved by heating it in a solution of zinc chloride. It swells up and finally dissolves in a treacle-like solution. On immersing in alcohol a glass coated with a film of this solution, or squirting a thread of it into alcohol, the cellulose is at once precipitated into a transparent form. It can also be dissolved in a solution of zinc chloride in hydrochloric acid and in a solution of hydrated copper oxide in strong ammonia.

There is another method of forming a solution of cellulose, and that is by treating it with a strongly alkaline solution, such as a concentrated one of caustic soda, and then acting on the product so obtained with carbon disulphide. This method is due, we believe, to Mr. Cross, and is employed in several industrial directions. The carbon disulphide reacts with the alkali-cellulose, forming a cellulose-sulpho-carbonate, which can be dissolved in water, forming a thick liquid, commercially known as "Viscose."

From this "Viscose" a tenacious film or mass of cellulose

sulpho-carbonate can be obtained by immersing the liquid in strong brine or in alcohol. Moreover, the solution decomposes on being kept and precipitates the cellulose once more. This action takes place slowly in the cold, but can be hastened by means of heat.

We will only refer to one other method of forming a solution of cellulose, and that is by a kindred process to the collodion one first mentioned. Instead of nitrating cellulose it may be treated with acetic or benzoic acid. These acids will not readily attack cellulose in its fibrous condition (cotton or paper), but cellulose which has been precipitated from "Viscose" is more susceptible to their action. No doubt some means for restoring aceto-cellulose to cellulose would be forthcoming were it required.

In thus giving an outline of the various plans which have been suggested for obtaining pure cellulose, free from the fibrous structure inherent in all the natural forms of it, we have kept in view the possibility that one day it will form the universally employed basis for the photographer's sensitive compound. The difficulties in the way of its use are essentially minor ones of practice only, and we believe will be overcome eventually. Its advantages of transparency, toughness, flexibility, non-flammability, and the inert way it behaves to sensitive emulsions, all point to it as the film of the future. There is a fortune before the man who can make its employment practical.—*Photography*.

PERSPECTIVE AND THE MOUNT.

IT is said that the primary object in mounting and framing a picture is to isolate it from surrounding objects, so that the attention of the spectator may be especially directed to it, to judge of its artistic merits, and that the best service a mount and frame can do for the picture is not to interfere with its effect. But is this really true? I think a few experiments will demonstrate that there is no neutral ground in the action of accessories. If the mount and frame do not enhance the good qualities of the photograph, they do positive injury by their incongruous presence. The prevailing fashion controls taste, and a particular variety of mount, in itself perhaps modest and unassuming, is made to do service for all kinds and conditions of prints, where even its modesty becomes sometimes too self-asserting, marring or destroying the artistic effect of the picture. Everyone knows of what value to the painter is the knowledge of simultaneous contrast of colors. To the photograper it is almost as important — indeed, quite so, when the subject of mounting the print comes into consideration. He must know the effect produced by the juxta-position of light and shade in order to produce certain definite effects.

All our knowledge, so we are told, is relative; that is, we know things in themselves only by their relation to things in the mass. So light and dark are only relative ideas—like great and small, hard and soft. We do not judge of any such things absolutely; we can judge only by comparison. The dimensions of a certain object cannot be truly estimated unless we possess some fixed standard as a guide, and the same object may be soft or hard in proportion to the power of muscular resistance. And so the light of one object may be comparatively dark when placed in relation with the light of another object. This latter fact can be demonstrated without much trouble so as to show, or rather reveal to us, how easy it is for our judgment to be mistaken, and how very largely responsible our presupposed ideas are for our mistakes in decision.

A piece of grey paper, for instance, out in the full blaze of the sunlight, is really much lighter than a pure white sheet in a darkened corner of the room; yet unhesitatingly do we declare from *a priori* judgment that the sheet is white and the paper grey.

Mr. Ruskin tells us that the deep blue sky at noon-time is whiter than any piece of paper we have ever seen. Hold up against the sky the whitest piece of any substance you know of, and see how dark the latter will grow in comparison.

An object of a certain tint appears always darker when placed in proximity to a much lighter object, and *vice versa*. If we take, for instance, a medium grey and place it upon two different grounds, one of which is lighter, the other darker than the superimposed grey itself, its appearance will be strikingly different in each case. Upon the lighter ground it will look much darker, while upon the ground darker than itself it will seem much lighter in tone. Any one may easily prove this by cutting two patterns from the same piece of grey paper and placing them upon two grounds. The effect in each case is so different that it is impossible to realize that both pieces are identical in tint until we place them on the same ground.

Now this change of brightness by contrast with the ground is precisely what takes place, although the spectator is unconscious of the operation, when a certain tone of a photograph is brought into contact with a mount darker or lighter than itself. It is just from this cause that photographers of natural objects are often true to nature, but untrue to the eye or the artistic sense.

The light and shade and colors in objects represented in painting often differ in most essential circumstances, in the effect which they produce from those of natural objects themselves.

In nature, bodies of various colors placed together have their tints reflected from each other, and so combined; this is one mode in which the hues of nature are harmonized before they reach the eye. But the colors upon the flat surface of the canvas cannot be thus reflected and mingled. Again, the hues of objects are affected by the atmosphere differently from those in a picture; the rays coming from distant objects are

softened by means of it, whereas in a painting from the canvas being close to the eye, the effect of the atmosphere amounts to nothing.

So in a painting a modification of the color-effect is attempted, or a sort of compromise made to produce the effect which the eye experiences. Nature, as it were, is falsified to give a true representation of things. As Helmholz has said, "our eyes are by no means perfect optical instruments," but we should be thankful that they are not, else would we be deprived of much æsthetic delight in nature. But the camera with its glass optic is unerringly true in its delineation of the external reality, and gives us things as they are, not as they seem. Not only in the presentation of colors upon the ground glass of the camera is photography artistically false, but in the rendering of light and shade where there, is so to say, no color. For instance, in a photograph of a high tower in a cloudless sky, the top and bottom are presented equally illuminated as truly is the case, but in a painting of a tower or steeple against a clear sky we see all the higher part darker than the lower, and instead of pronouncing the artist a falsifier of nature we applaud him for his artistic perception—and why do we do so? Although the highest part of the tower is actually in the brightest illumination it never looks so to us when we gaze up at it, and for the very reason which we have endeavored to make clear above in speaking of simultaneous contrasts. In looking toward the steeple a great part of the retina is opposed to the strong light of the clear sky, and when we shift the eye to look at the particular parts, the reflected light falls upon the retina where it is exhausted by the direct light of the sky. If we look at the top of the tower, and then drop our eyes to some of the lower architectural details, the effect will infallibly be that the upper part of the tower will appear darker.

To be consistent with artistic rendering the photograper should so manipulate the painting process as to give the effect the eye has, and not to insist that his work is artistic because it is absolutely true to nature.

We have wandered a good way from our subject of mount and perspective in preliminaries about simultaneous contrast of light and shade and colors. But in truth the mount is re-

sponsible for the aerial perspective of the picture. Not only is the character of the photographic tone changed, but also the whole character of the aerial perspective. For instance, in a landscape photograph, the distant mountains are rendered much lighter or darker in tone, dependant upon the character of the mount. The distance may thus be made to approach to the spectator or to recede from him. When we look at an object we do not fix our eyes steadily upon any one part, but the vision wanders over the whole field.

When we turn from a dark surface to a light one, there is a super-position of impressions upon the retina, the light portions of the new impression falling upon that part which had previously received the dark portions, is made more intense, because that part of the retina is less wearied than that part acted upon by the light of the first impression.

We have perhaps gone too far into the detail of the subject in a practical paper, but we are anxious to show that the character of the mount is not a question to be left to mere individual fancy. There is another factor in the case which we must touch upon. We have tried to show how a mount of a tone darker or lighter than the color of the photograph influences its character. But it isequally true that the special color of the mount also acts injuriously or advantageously upon the photograph.

We shall be brief and only refer to the well known physiological effect of colors when placed in juxta-position. How red, for instance, will give a greenish tint to the tones, and yellow a bluish cast.

Our modern printing methods give many varieties of colors: Bartolozzi Reds, Uranium Browns, Purples, Greens, Olives, Sepias, Blues, etc., and it is worth the while of trying the effect of different tints of mounts upon these various colors, and not to think that you are escaping the risk of having your artistic tone perception called in question by seeking refuge in the prevailing Rembrandt mount or placing it upon the pure white card.

If we place an oil painting without a frame upon a large piece of white paper or against a white wall, how offensively yellow and brown it appears, and the cause is that the eye alternately, though insensibly, moves from white background

to the painting, which is of a deeper tone, and consequently the browns and yellows are rendered unnaturally strong. We see the great necessity of the gilt frame for such a picture, and the effect that it produces. It does not merely cut off surrounding objects, but it prepares the eye for the colors of the painting. It allows the artist to use his art more boldly.

One can hardly err in using a plain, unostentatious gilt frame for isolating a picture, no matter what the prevailing tone may be, and yet the funeral black is indiscriminately drafted into service, because someone of taste once upon a time framed his picture in cypress because his special subject was enhanced thereby. It is really worth trying the effects of different colors in the mount upon the same photograph. A yellowish white mount, for instance, when used in connection with a landscape photograph in which the distant atmospheric effect is represented by a perfectly neutral gray, gives a more delicate, bluish, ether-like appearance and makes the mountains recede, while a grey mount, although inclined in tone to the blue, does not give nearly so fine an effect.

A purplish grey tone in a photograph will be found to look towards bluish when the mount is yellowish. Appended is a list of colors of low luminosity which contain a proportion of grey. They are the colors generally used for mounts.

Pairs of complimentary colors are indicated.

Maroon	Bluish Sage
Brown	Very Bluish Sage
Russet	Greenish Sage
Citrine	Slate
Olive	Lavender
Sage	Plum

SCIENTIFIC NOTES

Magnolium is a new alloy of aluminum and magnesium, described by Dr. Ludwig Mach, which possesses properties not found in the separate metals. Former investigators declared that the alloy was of little practical use, but the doctor declares that the unsatisfactory results are due to impurities in the metals and improper proportions; allows which for 100 parts of aluminum contain from 10-30 parts by weight of magnesium are ductile and vary in hardness between brass and bronze and are easily worked with the file on a lathe. The specific gravity is only 2 to 2-5, being less than aluminum itself. The alloy presents a brilliant silver surface and has a decided metalic ring like brass or steel. It is also capable of receiving a very high polish and the polished surface resists the dulling action of the air much better than polished steel or speculum metal. The surfaces are therefore most excellent reflectors and may be employed in the reflecting telescope with advantage of low specific gravity. Dr. V. Schuman, in connection with Dr. Mach, has examined the optical properties of the alloy, and they have come to the conclusion that the ultra-violet rays of the spectrum are better reflected by the magnolium than by silvered glass.

Lumiére Bros. and Seyenetz have found that the per-salts of cerium, the electro-negative radicle, which gives a soluble silver salt, such as the sulphate or nitrate, can be used as reducers, and act very rapidly without giving rise to any of the evils inseparable from the use of ferric salts. The sulphate obtainable in commerce is the best, the nitrate becoming rapidly reduced in aqueous solution. Neutral ceric sulphate, it must be noted, precipitates in presence of much water, but if a little sulphuric acid be added to the solution an acid salt results, which has no distinctive action on gelatine even in strong solution. This salt can be used in concentrated solution, the exact strength merely determining its rapidity of action. Its ready solubility in water, the good keeping properties of the solution when acidulated with sulphuric acid, its rapidity and

uniformity of action up to the exhaustion of the solution, make this reducer an extremely convenient reagent. It can be used for bromide prints without the danger of yellowing the whites.

The salt is best kept in a ten per cent. solution to which 4 c. c. of sulphuric acid per 100 c. c. is added. This acid solution does not act on gelatine, since it goes to form a feebly acid salt of cerium. This ten per cent. solution acts vigorously, and yet does not remove fine details in the shadows in preference to other parts of the negative as does the well-known ferricyanide and thiosulphate reducer. Its rapidity of action is easily controlled by simple dilution. A very rapid reducer, which acts more on the opaque portions of the negative than on the shadows, is produced by making a five per cent. solution of ceric sulphate.

The method of toning with copper recommended by Mr. W. B. Ferguson, of England, in a communication to the Royal Society, we have found to work well for transparencies and lantern slides, giving a considerable range of color, but the reducing action is too great when applied to paper prints. Several years ago we made use of a similar formula, which gave a beautiful rose tint to a window transparency, but the color changed very perceptibly in a few days and in a month no trace of the tint remained.

Mr. Ferguson's method is 1 oz. of a 10 per cent. solution of neutral potassium citrate, 70 minims of 10 per cent. copper sulphate and 60 of 10 per cent. solution of ferricyanide of potassium.

The editor of the *British Journal* has definitely settled the question: "Does backing of a plate diminish its speed?" by a series of practical trials. He cut a plate into two, backed one half of the piece and exposed the backed portion under a Warnerke sensitometer to the light of a naked gas flame, burning at a constant pressure, for exactly one minute. He immediately exposed the unbacked half in an exactly similar manner and for the same length of time. After developing in a normal pyro-soda solution for four minutes at a temperature of 60° F. the results were carefully examined and found to be absolutely identical as regards the sensitiveness.

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It is generally recommended to refix the negative which has been reduced with the ammonium persulphate, but where intensification follows reduction it will be found that greater strength and brilliancy is secured by omitting the hypo bath and intensifying upon the reduced image unfixed. The reduced silver forms an excellent substration for the deposition of the mercury. We have succeeded by this method in securing excellent printing qualities in negatives which otherwise would have been worthless. The intensification is carried on under subdued light.

Salts of peroxide of titanium as a reducer: When titanic acid, T_1O_2, is treated with hydrogen peroxide, titanium peroxide, NO_3, is produced, which is soluble in various acid solutions forming the salts of peroxide of titanium. These salts, the acids of which form soluble silver salts, act more or less as reducers. Among these titanium sulphate acts fairly energetically as a reducer.

Its action is rather curious. The gelatine film bearing the image is detached in thin films, in proportion to the action of the solution, without the underlying gelatine being in any way affected. The reduction seems to be due not to simple solution of silver, but also to removal of the film itself. The action is most apparent in the most transparent portions, a very perceptible relief being produced, and the fine details being eaten away.

A writer in *Photo Chronik* finds that a mixture of oxalic acid and ferric chloride is quickly decomposed under the influence of sunlight, but in a more limited degree by the electric light. The decomposition is caused only by the light and in no way by heat, therefore no noticeable reaction takes place when the light is cut off. A previous exposure of the separate bodies exerts no influence whatever on the degree of the decomposition of the mixture; neither is there any difference between old and new solutions. Further, the temperature of the mixture appears in no way to affect the decomposition. It is possible to limit the degree of decomposition by varying the density of the mixture, when notice must be taken of the translucent quality of the glass and film. Thinning the mixture has a similar effect on the decomposition both in the light and in the darkness and warmth.

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LITERARY NOTES

Mr. Sadakichi Hartman thinks that the term portrait is a too common place designation for Mr. Holland Day's work, and dignifies it with the appelation "plastic psychological syntheses of the persons represented," and then goes off into a strain about Mr. Day's personality.

Just think to what a pitch of absurdity this recent æsthetic photographic craze has reached when an admirer thus speaks of the photographer:

"Mr. Day is fond of strange and wayward fancies. He likes to strike rich chords, but muffled as it were, by the mist of his dreams. What delicate poems can be found among his studies after the nude—those graceful, youthful forms showing in calm repose on a background of some idyllic landscape! They appear in the twilight air, in which he likes to envelop them, like lovely figures of the past, telling of glories that have faded long ago. They are nearly always broad in treatment, without a trace of coarseness.

"He has always lived the life of an æsthetic, who appears to all, at the first glance, as an extraordinary extravagant personality, one that excites immediate curiosity. Strange stories, both astonishing and ridiculous, are told about him, and he in no way objects to them. In serious dignity he applies more of his imagination, for instance, to his mounting of prints than to his artistic productions themselves. To pose is a necessity to him, as it is only when he believes himself something out of the ordinary that he can accomplish good work, which is always an endeavor to realise something out of the ordinary."

In Bird-Lore (The Macmillan Co.) for April, a new camera is described which, like a gun, may be fired the moment it is sighted, an ingenious device enabling one to focus *after* the slide has been drawn from the plate-holder. The same magazine also contains bird calendars for the spring months, a paper on methods of bird-study at Wellesley, an account of the manner in which egrets' plumes are obtained in Venezuela, a report from the Postmaster General in regard to the improper use of the mails by feather dealers, numerous illustrations and the usual reviews and notes.

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The great demand for the Photo Miniature Series has obliged the publishers to republish entire new editions of Hand Camera Work and Photography Out of Doors. Tennant and Ward, New York.

The Eastman Kodak Co. send us their 1900 catalogue, entitled the Witchery of Kodakery, full of excellent illustrations and abundant information about that famous instrument, the world-wide known Kodak. We note the introduction of several novelties in Kodakery—the Folding Pocket Kodak, No. 1 A and No. 3, the No. 2 Flexo, the No. 1 Panorama Kodak and the No. 3 Cartridge. Any of our readers who would like to know what Kodak to take to the Paris Exposition (since everyone who wishes to photograph without molestation will have to take a Kodak there, Kodaks only being admitted free), should send for Witchery of Kodakery to Eastman Kodak Co., Rochester, N. Y.

Ferric and Heliographic Processes, George E. Brown; published by Dawbarn & Ward, London. This book is designed both for the amateur who wishes to make his own printing paper and also for the draughtsman, architect and engraver who reproduce from practical working plans, patterns and other drawings.

Only those processes which are of practical utility are treated, and the reader will find that the information is trustworthy.

La Role des Diverses Radiations en Photographié, Dr. P. Villard; Gauthier Villars, Paris. M. Villard treats of the various phenonoma presented by the different radiations, beginning with phosphoresence and fluorescence, up to the most recent discoveries. He shows that there is a side by side action between the chemical activity of a radiation and its capability of producing or destroying phosphoresence.

A number of experiments are detailed and the scientific side of the subject is well considered.

La Microphotographié, F. Monpillard; Gauthier Villars, Paris. This work is an up-to-date study of the application of photography to microscopy and treats of the various improvements,

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such as the introduction of orthochromatic methods, the new sources of illumination, the different eye-pieces, objectives, condensors, &c. The book is well written and of practical value to the microscopist.

Les Agrandissments, E. Wallon; Gauthier Villars, Paris. The author has given photographers a very excellent pamphlet on the subject of enlargement by photography, and goes quite into detail discussing the qualities necessary in the negative to produce best results, the optical conditions demanded, exposure, development, retouching and finishing. The work is interesting and practical and worthy the attention of the photographic manipulator.

La Chronophotographié, J. Marey; Gauthier Villars, Paris. In this very interesting little book M. Marey gives an account of the rise and development of chronophotography and the various improvements in the apparatus for recording rapid movements of animals. He also touches upon the value of the method for the study of movement in liquids and the vibration of musical strings, as well as its importance in the study of physiological problems.

It will be remembered that M. Marey, together with Mr. Maybridge, of this country, were the pioneers in what is known here as cinnematography.

The Chicago Society of Amateur Photographers is collecting material for a photographic library at their headquarters, the Art Institute, and are anxious to secure works on photography. All who are anxious to further this excellent movement of the society towards increasing its usefulness should correspond with the librarian, Mr. Willis L. Wyman, who desires to purchase books, pamphlets or magazines, preferably bound ones. Address, Librarian Chicago Society Amateur Photographers, Chicago.

It was the wish of the late Mr. Moody that his biography should be written by his son. Mr. W. R. Moody, who has in his possession all of his father's papers and is preparing a very complete life of the great preacher, has consented to write especially for the *Saturday Evening Post* a series of anecdotal

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papers on his father's life and work, profusely illustrated with hitherto unpublished photographs. The first of these papers, entitled Moody as Boy and Business Man, appeared in the April 7 number.

The Amateur Pointer for amateur photographers has removed to 122-124 Fifth Ave., Mercantile Bldg., New York. The great photographic firm of E. & H. T. Anthony Co., the publishers, has occupied the old premises, 591 Broadway, for nearly 32 years. The necessity for a location farther up town, with more modern appliances for the handling of goods, has been long apparent, and has resulted in the lease of the entire second floor of the Mercantile Building, on the west side of and fronting on Fifth Ave., and extending at the rear to 17th street on the south and 18th street on the north.

BUSINESS NOTES

Altschwager & Foy, of Minneapolis, offer a novelty in photographic supplies. It is the diamond multiplex holder, a rotary moving plate carrier, by means of which the plate may be moved not only vertically and horizontally but at any angle, and may be turned to bring the long or short dimension of the plate with the vertical line of the lens. The holder makes from 2 to 30 exposures on a 5-7 plate and is capable of affording a number of novel combinations. It will fit any 8x10 box. Write for book of information.

The Artist Photo-Print Co., of St. Louis, offer a very attractive oval frame, 16x20, in six different finishes at remarkably low prices. Judging by the half-tone illustrations in the price list we feel sure that they can meet the demands of photographic artists thoroughly. Price list sent on application.

Bullard & Moore, of Kansas City, have issued a beautifully illustrated catalogue describing their specialties, photo buttons, photo jewelry, medallions, advertising souvenirs, etc., which is well worth sending for.

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We have frequently touched upon the value of a well-selected background in enhancing the artistic beauty of a portrait. The trouble hitherto has been that artistic backgrounds have been of such high price that only the well-to-do professional could afford to purchase them. Fortunately the demand of the amateur, who as a rule in the art direction is exacting, has induced well-known painters to issue at a reasonable price, and even at a low price, most effective backgrounds. Formost among these artists is the Hub Scenic Co., No. 1 Brandon street, Boston, Mass. The company offers at very low prices a great variety of backgrounds, and the amateur especially does not do himself justice who does not send for their catalogue.

We have received the price list of the photographic chemicals manufactured and imported by Chas. Cooper & Co., 194 Worth street, New York. The success of an experiment largely depends upon the quality of the material employed, and the photographer cannot be too careful in securing chemically pure substances. The well established reputation of Chas. Cooper & Co. ensures to the photographer the confidence that his chemicals are of the greatest purity. He will find everything he desires in their price list, which will be mailed on application.

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645,952. Photographic print fabric, James A. Harvey, Toronto, Canada.

646,156. Easel support, George A. Peterson, San Francisco, Cal.

32,412. Design, photographic cabinet, Bert E. Underwood, Summit, N. J.

646,788. Magazine camera, Rella W. Balch and J. J. Merrill, Neillsville, Wis.

646,699. Photographing developing cabinet, Philip H. Holmes, Gardiner, Me.

646,664. Photographic printing frame, Warren Hull, Gasport, N. Y.

646,585. Portable dark room, John E. Quatsoe and W. Beier, Janesville, Wis.

647,388. Photographic washing tray, Wm. I. Evans, Washington, D. C.

647,185. Coin-controlled photograph-vending apparatus, L. W. King, New York.

647,197. Coin-controlled apparatus for exhibiting pictures, Henry W. Porter, Forestville, assignor of two-thirds to P. T. Farrell and J. M. Toohey, New Britain, Conn.

647,342. Photographic shutter, Louis J. Vogt, assignor by mesne assignments to German-American Bank, Rochester, N. Y.

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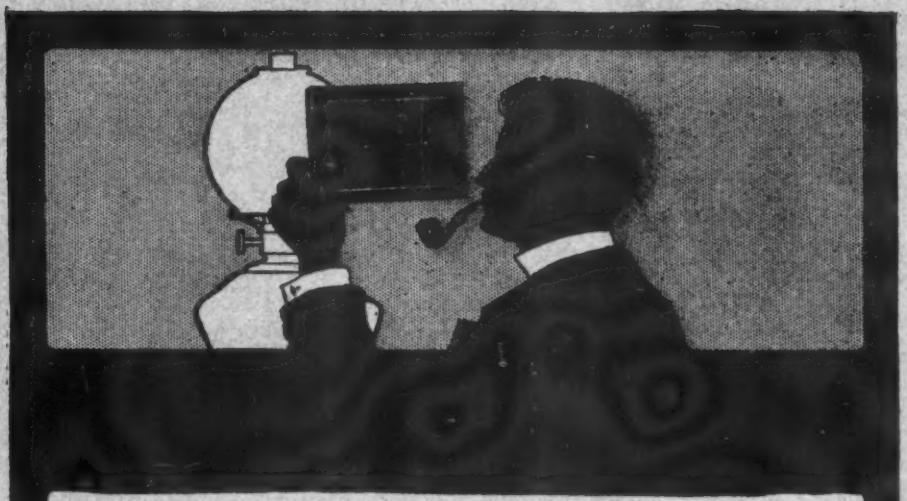

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